

Calculating – multiplying decimal fractions

- 7 You and your friends are going to the movies and it's your shout. Look at the price list below and use a multiplication strategy of your choice to answer the following questions. Show your thinking:

- a How much will it cost you for 4 "Under 13" tickets?

$$10.5 \times 4 = 42$$

It costs me \$42 for 4 "Under 13" tickets.

- b Two of your friends each want a large drink and a medium popcorn. What will that cost you?

$$3.5 \times 2 + 3.5 \times 2 = 7 \times 2 = 14$$

That will cost \$14.

- c You and your other friend want a choc top and a large drink each. What will that cost?

$$(3.25 + 3.5) \times 2 = 6.75 \times 2 = 13.50$$

That cost \$13.50

- d Halfway through the movie, you are all dying of thirst and you go out and buy 4 bottles of water. You pay for them with a \$20 note. How much change do you receive?

$$20 - 4 \times 1.95 = 20 - 7.8 = 12.20$$

I receive \$12.20 change.

- e Use the refreshment price list to design and calculate the cost of a snack that would help get you through this Maths lesson.

(Answer will vary)

Ticket prices	
Under 13	\$10.50
Adult	\$14.50
Refreshments	
Popcorn	S \$2.50 M \$3.50 L \$4.50
Drink	S \$2.50 M \$3.00 L \$3.50
Chocolate bar	\$1.95
Choc top	\$3.25
Water	\$1.95
Chips/Crisps	\$2.95



$$\begin{array}{r} 3.25 \\ + 3.5 \\ \hline 6.75 \\ \times 2 \\ \hline 13.50 \end{array}$$

Which operations do I need to use here? Is it only multiplication?



Calculating – dividing decimal fractions

Look at 64.4 divided by 5. We start with the largest place value.

6 tens divided by 5 is 1 ten with a remainder of 1 ten.

We rename this as 10 units and carry it over to the units column.

14 units divided by 5 is 2 with 4 units left over.

We rename this as 40 tenths and carry it. We now have 44 tenths.

44 tenths divided by 5 is 8 with a remainder of 4. We rename this as 40 hundredths. 40 hundredths divided by 5 is 8.

64.4 divided by 5 is 12.88

$$5 \overline{) 64.40} \begin{array}{r} 12.88 \\ \underline{50} \\ 14 \\ \underline{10} \\ 44 \\ \underline{40} \\ 40 \\ \underline{40} \\ 0 \end{array}$$

- 1 Divide these:

a $8 \overline{) 85.6} = 10.7$

b $5 \overline{) 47.0} = 9.4$

c $7 \overline{) 58.1} = 8.3$

d $5 \overline{) 63.5} = 12.7$

e $5 \overline{) 99.0} = 19.8$

f $6 \overline{) 72.30} = 12.05$

- 2 Sharing money is a time when we divide decimal fractions. Add the bills then divide them evenly among 4 people. Don't listen to the guy who said he only ate the rice – he's a cheapskate.

2 hot chocolates.....	\$5.60
2 milkshakes.....	\$4.20
2 muffins.....	\$5.80
1 large bowl chips.....	\$4.60
Total	\$20.20

$$20.20 \div 4 = 5.05$$

Each people will share \$5.05

1 Pad Thai.....	\$ 9.50
1 king prawns with veg.....	\$19.30
1 beef and broccoli.....	\$12.50
1 large rice.....	\$ 3.30
4 colas.....	\$ 8.60
Total	\$53.20

$$53.20 \div 4 = 13.30$$

Each people will share \$13.30

Calculating – dividing decimal fractions

3 Solve these decimal word problems using a mental or written strategy of your choice:

- a You and 6 friends win a jackpot totalling \$248.15. If you share the prize equally, how much will each of you receive?

$$248.15 \div 7 = 35.45$$

Each will receive \$35.45

- b Two of these friends decide that money is the root of all evil and forgo their share. How much do you each receive now?

$$248.15 \div 5 = 49.63$$

Each will receive \$49.63

- c To celebrate you go out and buy 5 ice creams, costing a total of \$11.25. What was the cost of an individual ice cream?

$$11.25 \div 5 = 2.25$$

Each ice-cream cost \$2.25

- 4 You remember the answer is 6.125. But you have lost the question! You know it was a division problem and that you divided 2 whole numbers to get to the answer. Both the numbers were smaller than 60. But that's all you remember. And your teacher wants to see what you have been doing during the lesson or you can kiss recess goodbye.

Save your recess and work out what the division problem was. You can try this with or without a calculator.

$$? \div ? = 6.125$$

$$\therefore 60 \div 10 = 6$$

I try $49 \div 8 = 6.125$

$$\begin{array}{r} 35.45 \\ 7 \overline{)248.15} \\ \underline{21} \\ 38 \\ \underline{35} \\ 3 \\ \underline{28} \\ 5 \\ \underline{49} \\ 63 \\ \underline{50} \\ 13 \\ \underline{12} \\ 15 \\ \underline{15} \\ 0 \end{array}$$

$$\begin{array}{r} 2.25 \\ 5 \overline{)11.25} \\ \underline{10} \\ 12 \\ \underline{10} \\ 25 \\ \underline{25} \\ 0 \end{array}$$



What number am I?

solve



Getting ready

See if you can guess the secret numbers below. You can use a calculator and co-opt a partner if you like.



What to do

- 1 I start with the number. I halve it, add 3.6 to that answer, divide this new number by 4 and then I add 0.3. My answer is 6.5. What number did I start with?

$$\begin{aligned} & [(6.5 - 0.3) \times 4 - 3.6] \times 2 \\ &= (6.2 \times 4 - 3.6) \times 2 \\ &= (24.8 - 3.6) \times 2 = 21.2 \times 2 = 42.4 \end{aligned}$$

I started with 42.4

- 2 I start with a new secret number. I add 1.4 to this, divide the new number by 11, halve the quotient and then halve it again. My answer is 1.25. What number did I start with?

$$\begin{aligned} & 1.25 \times 2 \times 2 \times 11 + 1.4 \\ &= 55 + 1.4 \\ &= 56.4 \end{aligned}$$

I started with 56.4

$$\begin{array}{r} 1.25 \\ \times 44 \\ \hline 5000 \\ 5000 \\ \hline 55.00 \end{array}$$

- 3 I start with a number, then halve it. I subtract 18.05 from the answer and then multiply this number by 3. I add 6 to the total and my answer is 96.3. What number did I start with?

$$\begin{aligned} & [(96.3 - 6) \div 3 + 18.05] \times 2 \\ &= (90.3 \div 3 + 18.05) \times 2 \\ &= (30.1 + 18.05) \times 2 = 48.15 \times 2 = 96.3 \end{aligned}$$

I started with 96.3

- 4 I start with a number and divide it by 8. I multiply the answer by 3.2 and then subtract 4.1 from this new answer. I multiply this by 23 and end up with 52.9. What number did I start with?

$$\begin{aligned} & [(52.9 \div 23) + 4.1] \div 3.2 \times 8 \\ &= (2.3 + 4.1) \div 3.2 \times 8 \\ &= 6.4 \div 3.2 \times 8 \\ &= 2 \times 8 = 16 \end{aligned}$$

Work backwards! You have to do the opposite process for each step.



Answer will vary.



What to do next

Now you know how these work, can you write your own problem for a partner to solve?